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EXAMINER
LERNER, MARTIN

ART UNIT	PAPER NUMBER
2654	5

DATE MAILED: 09/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/658,045	MURASHIMA, ATSUSHI	
	Examiner	Art Unit	
	Martin Lerner	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 to 19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 2, 5 to 7, 9, and 11 to 19* is/are rejected.

7)☒ Claim(s) *3,4,8 and 10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 November 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

On page 12, line 3, "differentiator 5070" should be –differentiator 5060— (Figure 2).

On page 27, line 2, "speech mode determining circuit 2050" should be –speech mode determining circuit 3050— (Figure 7).

On page 33, line 6, "second switching circuit 7100" should be –second switching circuit 7110— (Figure 9).

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. Claims 1, 2, 5 to 7, 9, 11 to 14, 17, and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by *Jarvinen et al.*

Regarding independent claims 1 and 12, *Jarvinen et al.* discloses a method and apparatus for generating comfort noise by decoding speech, comprising:

"calculating a norm of said excitation signal for each fixed period" – the random excitation gain $g_{cn}(j)$ is computed for each subframe, based on the energy of the LP residual signal of the subframe, according to equation (10); random excitation gain $g_{cn}(j)$ is an average ("norm") of the LSF prediction residual signals $r(n)$ for 39 subframes, normalized by denominator 10 and scaling factor 1.286 (column 24, lines 24 to 40); compare Equation (10) with Page 22, Line 5 of the Specification, which is Applicant's calculation for a "norm"; Merriam-Webster's Dictionary defines a "norm" as an "average";

"smoothing said calculated norm using a norm obtained in a previous period" – the computed random excitation gain values are averaged and updated in the first subframe of each frame to produce $g_{cn}^{mean}(n)$ according to Equation (11); computed random excitation gain value $g_{cn}^{mean}(n)$ is computed based upon an average of the last six subframe values of random excitation gain $g_{cn}(j)$ ("using a norm obtained in a previous period") (column 24, lines 45 to 63); implicitly, averaging over the last six subframes produces a "smoothing" of the value for random excitation gain value $g_{cn}^{mean}(n)$ for the comfort noise;

"changing amplitude of said excitation signal in said period using said calculated norm and said smoothed norm" – in the decoder, the excitation 212 is formed by first generating the white noise excitation sequence 114 with random excitation generator 110, which is then scaled by g_{mean} in scaling block 115 (column 8, lines 40 to 47: Figure 2b); $g_{cn}^{mean}(n)$ is the "smoothed norm" and is calculated from components of $g_{cn}(j)$, "said calculated norm";

"driving said filter by said excitation signal with the changed amplitude" – synthesis filter 112 receives the white noise sequence from random excitation generator 110, as scaled by g_{mean} in scaling block 115; the spectrally controlled excitation 212 is then used in the speech synthesis filter 112 to produce comfort noise (column 8, line 40 to column 9, line 19: Figure 2b).

Regarding claims 2, 7, and 13, *Jarvinen et al.* discloses residual excitation parameters *r(n)* and LSF parameters *f(i)* are vectors (column 21, line 62 to column 22, line 13; column 23, lines 49 to 63).

Regarding claims 5, 11, and 18, *Jarvinen et al.* discloses a coder produces linear prediction parameters by LPC-analysis 101, and random excitation spectral control (RESC) parameters, r_{mean}, characterize the spectrum of the excitation by a second analysis; $f^{mean}(i)$ represents the LPC parameters ("a linear prediction coefficient") and $r_{mean}(i)$ represents the excitation ("an excitation signal") (column 7, line 56 to column 8, line 5: Figure 2a).

Regarding claims 6 and 14, *Jarvinen et al.* discloses SP flags and VAD flags so that comfort noise is only generated during periods of silence or no-speech; Voice Activity Detector (VAD) 21 determines whether the input signal from microphone 19 contains speech; whenever the VAD flag="1", the speech encoded output frame is passed directly to the radio transmitter 14, marked with the SP flag="1"; at the end of a speech burst, the transmitter marks the frame with the SP flag="0" (column 21, lines 8 to 45: Figures 12, 14, and 15); comfort noise is generated over an averaging period for consecutive frames marked with VAD="0" (column 22, lines 30 to 38).

Regarding claim 9, *Jarvinen et al.* discloses SP flags and VAD flags so that comfort noise is only generated during periods of silence or no-speech; Voice Activity Detector (VAD) 21 determines whether the input signal from microphone 19 contains speech; whenever the VAD flag="1", the speech encoded output frame is passed directly to the radio transmitter 14, marked with the SP flag="1"; at the end of a speech burst, the transmitter marks the frame with the SP flag="0" (column 21, lines 8 to 45: Figures 12, 14, and 15); comfort noise is generated over an averaging period for consecutive frames marked with VAD="0" (column 22, lines 30 to 38); identifying whether the frame is speech or silence according to the value of the transmitted SP flags and VAD flags corresponds to a "nature of said received signal in said noise period is identified based on said decoded information"; computing $g_{cn}^{mean}(n)$ only for frames marked with VAD="0" corresponds to "processing contents at said smoothing step are selected based on said identified nature."

Regarding claim 17, *Jarvinen et al.* discloses VAD flags and SP flags produce comfort noise with a random excitation gain only during periods of silence; thus, flags act as a switch to calculate excitation for comfort noise during periods of silence with Equation (11), and to calculate excitation for periods of speech via synthesis filter 112 in the ordinary way (column 7, line 56 to column 8, line 5; column 8, lines 41 to 47; column 22, lines 30 to 38: Figures 2a and 2b).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 15, 16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Jarvinen et al.* in view of *Johnson*.

Regarding claim 15, *Jarvinen et al.* classifies the nature of the received signal in the noise period using decoded information from the VAD flags and SP flags. (Column 21, Lines 8 to 45: Figures 12, 14, and 15) However, *Jarvinen et al.* omits a smoothing circuit including a plurality of smoothing filters with characteristics different from one another, where one of the said smoothing filters is selected in accordance with the identified nature. *Johnson* teaches a method and apparatus for enhancing noise-corrupted speech, where a spectral smoothing module 22, referred to as a smoothed Wiener filter (SWF), controls the size of a window with which a Wiener filter filters noise-corrupted speech. VAD 20 outputs one of integers 0, 1, 2, and 3 indicating the speech state of the current frame, as designating states of "Silence", "Primary Detect", "Speech, and "Hang Over," respectively. A larger size of the smoothing window enables SWF module 22 to efficiently smooth out the spikes in the noise spectrum, which are most likely due to random variations. On the other hand, when the current state is not the Silence state, then the SWF modules 22 utilizes a smaller size of the smoothing

window, which preserves spectrum information. The VAD 20 may switch filters having four different widths based on the likelihood of the speech existence. (Column 10, Line 23 to Column 11, Line 11: Figures 1 and 2) It is suggested this method and apparatus has the advantage of improving the speech quality of a noise suppression system by reducing the variance of the noise-corrupted signal when only noise exists and enhancing intelligibility. (Column 4, Lines 41 to 64) Switching the window length of the smoothed Wiener filter of *Johnson* is equivalent to "a plurality of smoothing filters with characteristics different from one another". It would have been obvious to one having ordinary skill in the art to include the plurality of smoothed Wiener filters of *Johnson* in the method and apparatus for generating comfort noise of *Jarvinen et al.* for the purpose of improving speech quality and enhancing intelligibility.

Regarding claim 16, *Jarvinen et al.* discloses residual excitation *r(n)* and LSF parameters *f(i)* are vectors (column 21, line 62 to column 22, line 13; column 23, lines 49 to 63).

Regarding claim 19, *Jarvinen et al.* discloses a coder produces linear prediction parameters by LPC-analysis 101, and random excitation spectral control (RESC) parameters, r_{mean}, characterize the spectrum of the excitation by a second analysis; $f^{mean}(i)$ represents the LPC parameters ("a linear prediction coefficient") and $r_{mean}(i)$ represents the excitation ("an excitation signal") (column 7, line 56 to column 8, line 5: Figure 2a).

Allowable Subject Matter

6. Claims 3, 4, 8, and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

Ertem et al. discloses related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (703) 308-9064. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (703) 305-9645. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

ml
9/8/03

Richemond Dorvil
Primary Examiner